

## CLAIMS

1. In a chemical mechanical planarization (CMP) system, a processing surface temperature controller, comprising:

5 an array of thermal elements, each of the thermal elements of the array being independently controlled, the array of thermal elements being positioned to contact a back surface of the processing surface.

2. In a chemical mechanical planarization (CMP) system, the processing surface 10 temperature controller of claim 1, wherein each of the thermal elements of the array is connected to a system controller, the system controller being configured to manage a surface temperature of the processing surface.

3. In a chemical mechanical planarization (CMP) system, the processing surface 15 temperature controller of claim 1, wherein the processing surface includes a plurality of processing zones, and wherein each of the thermal elements of the array of thermal elements corresponds to a processing zone, the thermal elements of the array being independently controlled to manipulate a surface temperature of the processing zone corresponding to the thermal element.

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4. In a chemical mechanical planarization (CMP) system, the processing surface temperature controller of claim 3, wherein each of the thermal elements of the array of thermal elements is configured to apply thermal energy to the processing zone corresponding the thermal element to raise the surface temperature of the processing zone corresponding to the 25 thermal element.

5. In a chemical mechanical planarization (CMP) system, the processing surface temperature controller of claim 3, wherein each of the thermal elements of the array of thermal elements is configured to apply thermal energy to the processing zone corresponding to the  
5 thermal element to lower the surface temperature of the processing zone corresponding the thermal element.

6. In a chemical mechanical planarization (CMP) system, a method for controlling the temperature of a processing surface, comprising:

10 applying thermal energy to a linear array of locations on a backside of the processing surface, the linear array of locations spanning from a first location to a second location of the processing surface; and

controlling a degree of the applied thermal energy at each of the linear array of locations.

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7. In a chemical mechanical planarization (CMP) system, the method for controlling the temperature of the processing surface as recited in claim 6, wherein each location of the linear array of locations includes a thermal unit, the thermal unit being configured to apply thermal energy to the backside of the processing surface.

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8. In a chemical mechanical planarization (CMP) system, the method for controlling the temperature of the processing surface as recited in claim 7, wherein each thermal unit is connected to a processing surface temperature controller, the processing surface temperature controller being configured to control the application of thermal energy by each  
25 thermal unit in order to maintain a desired processing surface temperature.

9. In a chemical mechanical planarization (CMP) system, the method for controlling the temperature of the processing surface as recited in claim 8, wherein each location of the linear array of locations corresponds to a processing zone of the processing surface, and wherein each a thermal unit is configured to apply thermal energy to the backside of the processing surface to control a processing temperature of the processing zone.

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10. In a chemical mechanical planarization (CMP) system, the method for controlling the temperature of the processing surface as recited in claim 9, wherein each thermal unit is configured to apply thermal energy to the backside of the processing surface to increase the temperature of the processing zone.

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11. In a chemical mechanical planarization (CMP) system, the method for controlling the temperature of the processing surface as recited in claim 9, wherein each thermal unit is configured to apply thermal energy to the backside of the linear belt to decrease the temperature of the processing zone.

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12. In a chemical mechanical planarization (CMP) system, the CMP system including an outer preparation surface and an inner surface, a preparation surface conditioner, comprising:

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an array of conditioning pucks for conditioning the outer preparation surface, each of the conditioning pucks of the array being independently controlled.

13. In a chemical mechanical planarization (CMP) system, the CMP system including an outer preparation surface and an inner surface, the preparation surface conditioner as recited in claim 12, further comprising:

5 an array of spray nozzles for rinsing the outer preparation surface and the conditioning pucks, each of the spray nozzles of the array being independently controlled.

14. In a chemical mechanical planarization (CMP) system, the CMP system including an outer preparation surface and an inner surface, the preparation surface conditioner as recited in claim 13, further comprising:

10 an array of thistle brushes configured to sweep the outer preparation surface.

15. In a chemical mechanical planarization (CMP) system, the CMP system including an outer preparation surface and an inner surface, the preparation surface conditioner as recited in claim 12, wherein each of the conditioning pucks of the array is independently controlled and is configurable to apply a pressure against the outer preparation surface from about 0.1 PSI to about 2.0 PSI.

16. In a chemical mechanical planarization (CMP) system, the CMP system having an outer processing surface and an inner surface, a method for conditioning the outer 20 processing surface, comprising:

distributing a plurality of independent conditioning elements along a linear path; and applying each of the plurality of independent conditioning elements to the outer processing surface.

17. In a chemical mechanical planarization (CMP) system, the CMP system having an outer processing surface and an inner surface, the method for conditioning the outer processing surface as recited in claim 16, further comprising:

distributing a plurality of spray nozzles along a linear path; and

5 rinsing the outer preparation surface using each of the plurality of spray nozzles along the linear path.

18. In a chemical mechanical planarization (CMP) system, the CMP system having

an outer processing surface and an inner surface, the method for conditioning the outer processing surface as recited in claim 17, further comprising:

10 distributing a plurality of thistle brushes along a linear path; and

cleaning the outer preparation surface using each of the plurality of thistle brushes along the linear path.

15 19. In a chemical mechanical planarization (CMP) system, the CMP system having

an outer processing surface and an inner surface, the method for conditioning the outer processing surface as recited in claim 16, wherein the independent conditioning elements are configurable to apply a pressure against the outer preparation surface from about 0.1 PSI to

about 2.0 PSI.

20 20. In a chemical mechanical planarization (CMP) system, the CMP system having

an outer processing surface and an inner surface, the method for conditioning the outer processing surface as recited in claim 16, wherein the CMP system is a linear belt CMP processing system.